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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/724,586	11/28/2000	Roman Sakowicz	UCSD-04871	9471
23535	7590 06/11/2003			•
MEDLEN & CARROLL, LLP			EXAMINER	
101 HOWARD STREET SUITE 350			HINES, JANA A	
SAN FRANCISCO, CA 94105			ART UNIT	PAPER NUMBER
		•	1645	12
			DATE MAILED: 06/11/2003	

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application N .	Applicant(s)				
		09/724,586	SAKOWICZ ET AL.				
	Office Action Summary	Examin r	Art Unit				
		Ja-Na Hines	1645				
The MAILING DATE f this c mmunication appears on the c ver sheet with the corresp ndenc address Period for Reply							
THE   - Exte after - If the - If NC - Failu - Any (	ORTENED STATUTORY PERIOD FOR REPLY MAILING DATE OF THIS COMMUNICATION. Insions of time may be available under the provisions of 37 CFR 1.13 SIX (6) MONTHS from the mailing date of this communication. The period for reply specified above is less than thirty (30) days, a reply openiod for reply is specified above, the maximum statutory period we use to reply within the set or extended period for reply will, by statute, reply received by the Office later than three months after the mailing ed patent term adjustment. See 37 CFR 1.704(b).	86(a). In no event, however, may a reply be ti within the statutory minimum of thirty (30) da rill apply and will expire SIX (6) MONTHS fron cause the application to become ABANDONE	mely filed ys will be considered timely. the mailing date of this communication. ED (35 U.S.C. § 133).				
1)⊠	Responsive to communication(s) filed on 17 h	<u> 1arch 2003</u> .					
2a)⊠	This action is <b>FINAL</b> . 2b) Thi	s action is non-final.					
3)	closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.						
·	ion of Claims						
•	Claim(s) <u>1,2,4,5,7-9,11-13,50-52,54-56 and 59</u>		ation.				
	4a) Of the above claim(s) is/are withdrawn from consideration.						
· <u> </u>	Claim(s) <u>1, 8,9,11,13,50-52,54,59,64,68,74-76,81-82</u> is/are allowed.						
·	Claim(s) <u>2, 12, 55-56, 60-63, 65-67, 69-73 and 83-88</u> is/are rejected.						
-:-	Claim(s) <u>2,4,5,7,12,63 and 77-80</u> is/are objected to.						
8)∐ Applicati	Claim(s) are subject to restriction and/or ion Papers	election requirement.					
	The specification is objected to by the Examiner	·.					
,	The drawing(s) filed on is/are: a)☐ accep	_	aminer.				
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).							
11)[	The proposed drawing correction filed on	is: a)  approved b) disappr	oved by the Examiner.				
If approved, corrected drawings are required in reply to this Office action.							
12) The oath or declaration is objected to by the Examiner.							
Priority ι	under 35 U.S.C. §§ 119 and 120						
13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).							
a)	☐ All b)☐ Some * c)☐ None of:						
	1. Certified copies of the priority documents have been received.						
	2. Certified copies of the priority documents have been received in Application No						
* 5	3. Copies of the certified copies of the prior application from the International Bur See the attached detailed Office action for a list of the control of the control of the control of the control of the certified copies of the prior of	reau (PCT Rule 17.2(a)).	-				
14) 🗌 A	14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).						
a) The translation of the foreign language provisional application has been received.  15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.							
Attachmen	at(s)						
2) 🔲 Notic	ce of References Cited (PTO-892) ce of Draftsperson's Patent Drawing Review (PTO-948) mation Disclosure Statement(s) (PTO-1449) Paper No(s)	5) Notice of Informal	y (PTO-413) Paper No(s) Patent Application (PTO-152)				

# NOTICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE DISCLOSURES

Applicant must file the items indicated below within the time period set the Office action to which the Notice is attached to avoid abandonment under 35 U.S.C. § 133 (extensions of time may be obtained under the provisions of 37 CFR 1.136(a)).

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 C.F.R. 1.821 - 1.825 for the following reason(s):

X	1. This application clearly fails to comply with the requirements of 37 C.F.R. 1.821-1.825. Applicant's attention is directed to the final rulemaking notice published at 55 FR 18230 (May 1, 1990), and 1114 OG 29 (May 15, 1990). If the effective filing date is on or after July 1, 1998, see the final rulemaking notice published at 63 FR 29620 (June 1, 1998) and 1211 OG 82 (June 23, 1998).
	2. This application does not contain, as a separate part of the disclosure on paper copy, a "Sequence Listing" as required by 37 C.F.R. 1.821(c).
	3. A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 C.F.R. 1.821(e).
	4. A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 C.F.R. 1.822 and/or 1.823, as indicated on the attached copy of the marked -up "Raw Sequence Listing."
	he computer readable form that has been filed with this application has been found to be damaged nd/or unreadable as indicated on the attached CRF Diskette Problem Report. A Substitute computer readable form must be submitted as required by 37 C.F.R. 1.825(d).
	6. The paper copy of the "Sequence Listing" is not the same as the computer readable from of the "Sequence Listing" as required by 37 C.F.R. 1.821(e).
X	7. Other: Claim 7 reites sequences without an identifying sequence number
Ар	plicant Must Provide:
X	An initial or substitute computer readable form (CRF) copy of the "Sequence Listing".
X	An initial or <u>substitute</u> paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification.
X	A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 C.F.R. 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d).
For	questions regarding compliance to these requirements, please contact:
For	Rules Interpretation, call (703) 308-4216 CRF Submission Help, call (703) 308-4212 entIn Software Program Support Technical Assistance

Application/Control Number: 09/724,586 Page 2

Art Unit: 1645

#### **DETAILED ACTION**

#### Amendment Entry

1. Applicants amendment filed March 17, 2003 has been entered. The examiner acknowledges the amendment to the specification. Claims 3, 6, 10, 49 and 53 have been cancelled. Claims 1-2, 7-9, 11-12, 50-52 and 54-56 have been amended. Claims 59-88 have been newly added. Claims 1-2, 4-5, 7-9, 11-13, 50-52, 54-56 and 59-88 are under consideration in this office action.

### Withdrawal of Rejections

- 2. The following rejections have been withdrawn in view of applicants' amendments and arguments:
- a) The rejection of claims 6,8-10 and 53-56 under 35 U.S.C. 112, second paragraph;
- b)The written description rejection of claims 1-13 and 49-56 under 35 U.S.C. 112, first paragraph; and
- c) The enablement rejection of claims 1-13 and 49-56 under 35 U.S.C. 112, first paragraph.

#### Response to Arguments

3. Applicant's arguments with respect to claims 1-13 and 49-56 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 1645

## N w Grounds of Rejection

#### Claim Objections

4. Claims 2, 4-5, 12, 63, and 77-80 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Dependent claims 2, 4-5, 12, 63 and 77 are drawn to a nucleic acid that encodes the entire SEQ ID NO:1 while claim 1 only encodes the amino acids 1 to 357 of SEQ ID NO:1; thus the dependant claims fail to further limit claim 1.

## Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 55-56, 61-62, 65-67, 69-73 and 87-88 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

**Art Unit: 1645** 

are

Claims 55 and 56 drawn to the nucleotide sequences comprising nucleic acids either 1327 to 1803 or 1804 to 2352 of SEQ ID NO:2 that encode a protein having plus end directed microtubule motor activity. There is no evidence of record of a relationship between the structure of the instantly claimed polynucleotides and the plus end directed motor activity. The specification fails to provide any reliable information about the structure and the corresponding function. Rather the specification teaches that plus directed microtubule motor activity would only be found within nucleotides 1-1071, and that nucleotides 1329-1803 refer to the stalk domain which fails to have motor activity; nucleotides 1804 to 2352 refers to the tail domain which fails to have motor activity. See pages 22-23 of the instant specification. There is no evidence that the claimed isolated nucleic acid sequences have a known structural and functional relationship to the plus directed motor activity. Moreover, in absence of a start and stop codon and in absence of the specification to provide clear protocol by which the hyphal fungus polypeptide/ polynucleotide comprising SEQ ID NO: 2 was isolated from the microorganism of interest; it is not readily apparent to a person of skill in the art that the claimed polynucleotide is expressed by the hyphal fungus.

Claims 61, 65, 66 and 69-73 are drawn to isolated nucleic acid sequences encoding proteins comprising amino acids 358 to 442, 443 to 601 or 602 to 784 of SEQ ID NO:1. The specification does not provide functional or structural characterization of the full-length open reading frame of the instantly claimed polynucleotides comprising amino acids 358 to 442, 443 to 601 or 602 to 784 of SEQ ID NO:1. The specification does not provide a clear protocol by which the claimed polynucleotide was isolated from

Art Unit: 1645

the hyphal fungus at the time the invention was made. The specification does not provide structural characterization of the complete open reading frame of the hyphal fungus, i.e., including a start and stop codon. In the instant case, the classic start and stop codons are missing from the beginning and end of the nucleic acid from which the sequences of the polypeptide were derived. The specification alleges functionality, i.e., having plus end directed microtubule motor activity, however similar polynucleotides and corresponding polypeptides in the art are highly variant and all begin and end with a classic start and stop codon. In view of the lack of evidence in the specification as filed, it is apparent that one skilled in the art would recognize that applicants were not in possession, at the time of filing the instant application, of a genus of the polynucleotides. Absent characterization of the start and stop codons, the genus of the hyphal fungus polynucleotides that encode polypeptides comprised in SEQ ID NO:1 is highly diverse and variant.

Claims 62, 67 and 87-88 are drawn to the polynucleotide comprising amino acids 358 to 442, 443 to 601 or 602 to 784 of SEQ ID NO:1 and having plus end directed microtubule motor activity, there is no evidence of record of a relationship between the structure of the instantly claimed polynucleotides and the plus end directed motor activity. The specification fails to provide any reliable information about the structure and the corresponding function. There is no evidence that the claimed isolated nucleic acid sequences have a known structural and functional relationship to other full-length proteins. The art indicates that the structure of the polypeptides and polynucleotides would be expected to be highly variant. Moreover, in absence of a start and stop codon

**Art Unit: 1645** 

and in absence of the specification to provide clear protocol by which the hyphal fungus polypeptide/ polynucleotide comprising SEQ ID NO: 1 was isolated from the microorganism of interest; it is not readily apparent to a person of skill in the art that the claimed polynucleotide is expressed by the hyphal fungus.

In view of these considerations, a person of skill in the art would not have viewed the teachings of the specification sufficient to show that Applicants were in possession of the polynucleotides as asserted in the claims.

6. Claims 55, 56, 62, 67 and 87-88 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

Neither the specification nor originally presented claims provides support for nucleotides 1327-1803 or 1804-2352 of SEQ ID NO:2 having plus end directed microtubule motor activity; an isolated nucleic acid sequence encoding a protein comprising amino acids 443-601 or 602 to 784 of SEQ ID NO:1 having plus end-directed microtubule motor activity; and isolated nucleic acid sequences encoding a microtubule motor protein wherein the protein has a domain that has greater than 95% amino acid sequence identity to amino acids 443 to 601 or 601 to 784 of SEQ ID NO:1 and has plus end directed microtubule motor activity.

Page 7

Art Unit: 1645

Applicant did not point to support in the specification for such nucleic acid sequences that have plus directed motor activity when such activity is only found within nucleotides 1 to 1071 or amino acids 1 to 357. See the specification at page 22. Moreover, applicant failed to specifically point to the identity or provide structural characteristics of nucleic acid sequences that encode proteins that comprise the motor activity. Thus, there appears to be no teaching of isolated nucleotides 1327-1803 or 1804-2352 of SEQ ID NO:2 having plus end directed microtubule motor activity; an isolated nucleic acid sequence encoding a protein comprising amino acids 443-601 or 602 to 784 of SEQ ID NO:1 having plus end-directed microtubule motor activity; and isolated nucleic acid sequences encoding a microtubule motor protein wherein the protein has a domain that has greater than 95% amino acid sequence identity to amino acids 443to 601 or 601-to 784 of SEQ ID NO:1 and has plus end directed microtubule motor activity. Applicant has pointed to various pages of the instant specification and claims for support of the amendment, however it appears that the entire specification appears to fail to recite support for the newly recited sequences with the ability to have the plus end directed microtubule motor activity. Therefore, it appears that there is no support in the specification. Therefore, applicants must specifically point to page and line number support for the identity of such nucleic acids as recited by the newly added amendments. Therefore, the new claims incorporate new matter and are accordingly rejected.

7. Claims 55, 56, 62, 67 and 87-88 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in

Art Unit: 1645

such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are drawn to an isolated nucleic acid sequence comprising nucleotides 1327-1803 or 1804-2352 of SEQ ID NO:2 and encoding a protein having plus end directed microtubule motor activity; an isolated nucleic acid sequence encoding a protein comprising amino acids 443-601 or 602 to 784 of SEQ ID NO:1 having plus end-directed microtubule motor activity; and an isolated nucleic acid sequences encoding a microtubule motor protein wherein the protein has a domain that has greater than 95% amino acid sequence identity to amino acids 443 to 601 or 601 to 784 of SEQ ID NO:1 and has plus end directed microtubule motor activity.

The specification at pages 22-23 teaches that plus end directed motor activity is found when the sequence comprises the motor domain and such activity is only found within nucleotides 1 to 1071 or amino acids 1 to 357. There is no teaching that following nucleotides 1327-1803 or 1804-2352 of SEQ ID NO:2; an isolated nucleic acid sequence encoding a protein comprising amino acids 443-601 or 602 to 784 of SEQ ID NO:1; and isolated nucleic acid sequences encoding a microtubule motor protein wherein the protein has a domain that has greater than 95% amino acid sequence identity to amino acids 443 to 601 or 601 to 784 of SEQ ID NO:1 has plus end directed microtubule motor activity, since the recited claims fail to comprise the motor domain necessary to encode motor activity. The specification is not enabled for any of the claimed polynucleotides, because the specification fails to teach sequences can retain the claimed characteristic of having plus end directed microtubule motor activity without

Art Unit: 1645

having the motor region. The specification lacks any written description of a structure or relevant identifying characteristics of a representative number of polynucleotides encoding a representative number of proteins sufficient to allow one skilled in the art to determine that the inventor had possession of the invention as claimed. The specification teaches what the critical nucleic acids are which are necessary to have motor activity, yet the claimed sequences fail to comprise said regions. The specification fails to teach the identity of any nucleic acid sequences with the claimed abilities. Therefore, the specification fails to enable an isolated nucleic acid sequence comprising nucleotides 1327-1803 or 1804-2352 of SEQ ID NO:2 and encoding a protein having plus end directed microtubule motor activity; an isolated nucleic acid sequence encoding a protein comprising amino acids 443-601 or 602 to 784 of SEQ ID NO:1 having plus end-directed microtubule motor activity; and isolated nucleic acid sequences encoding a microtubule motor protein wherein the protein has a domain that has greater than 95% amino acid sequence identity to amino acids 443 to 601 or 601 to 784 of SEQ ID NO:1 and has plus end directed microtubule motor activity.

Moreover, applicant failed to specifically point to the identity or provide structural characteristics of nucleic acid sequences that encode proteins that comprise the motor activity. Thus, there appears to be no teaching of isolated nucleotides 1327-1803 or 1804-2352 of SEQ ID NO:2 having plus end directed microtubule motor activity; an isolated nucleic acid sequence encoding a protein comprising amino acids 443-601 or 602 to 784 of SEQ ID NO:1 having plus end-directed microtubule motor activity; and an isolated nucleic acid sequences encoding a microtubule motor protein wherein the

Art Unit: 1645

protein has a domain that has greater than 95% amino acid sequence identity to amino acids 443 to 601 or 601 to 784 of SEQ ID NO:1 and has plus end directed microtubule motor activity. Applicant has pointed to various pages of the instant specification and claims for support of the amendment, however it appears that the entire specification fails to recite support for the newly recited sequences with the ability to have the plus end directed microtubule motor activity. The specification only teaches that such sequences can be encoded.

In absence of further guidance from Applicants, the skilled artisan would have to discover what the appropriate nucleic acids would be. Such experimentation requires ingenuity beyond that expected of one of ordinary skill in the art. Such need for non-routine experimentation demonstrates that the specification is not enabled for any asserted use or well-established use of a isolated nucleic acid sequence comprising nucleotides 1327-1803 or 1804-2352 of SEQ ID NO:2 and encoding a protein having plus end directed microtubule motor activity; an isolated nucleic acid sequence encoding a protein comprising amino acids 443-601 or 602 to 784 of SEQ ID NO:1 having plus end-directed microtubule motor activity; and an isolated nucleic acid sequences encoding a microtubule motor protein wherein the protein has a domain that has greater than 95% amino acid sequence identity to amino acids 443 to 601 or 601 to 784 of SEQ ID NO:1 and has plus end directed microtubule motor activity.

The claimed nucleic acids would not predictably result in the microtubule motor protein comprising plus end directed microtubule motor activity. No working examples are shown containing the missing information. Without such information, one of skill in

Application/Control Number: 09/724,586 Page 11

Art Unit: 1645

the art could not predict the function of the desired polynucleotide. Accordingly, one of skill in the art would be required to perform undue experimentation to use the claimed nucleic acid to produce such isolated nucleic acid sequences. Therefore, one skilled in the art could not make and/or use the invention without undue experimentation.

- 8. Claims 2, 12, 60, 63, 70 and 83-88 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- 9. Claims 2, 12 and 63 are unclear. The claims are drawn to an isolated nucleic acid sequence wherein the protein specifically binds to polyclonal antibodies to *Thermomyces lanuginosus* gamma protein listed as SEQ ID NO:1. It is unclear to what the claim is referring, since the claims are actually drawn to the nucleic acid and not to the function of the protein and its ability to bind polyclonal antibodies. It is unclear what applicants are attempting to claim, i.e., the activity of the polyclonal antibodies bind both SEQ ID NO:1 and the protein encoded by the nucleic acid sequence. It is unclear that the epitopes which the polyclonal antibody binds to is found on the isolated nucleic acid sequence that encodes amino acids 1 to 357 of SEQ ID NO:1 and to the *Thermomyces lanuginosus* gamma protein listed within the entire 784 amino acids of SEQ ID NO:1.

The term "specifically binds" in the claims is a relative term that renders the claim indefinite. The term "specifically binds" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The

Application/Control Number: 09/724,586 Page 12

Art Unit: 1645

metes and bounds of the claim cannot be ascertained, thus clarification is required to overcome the rejection.

- 10. Dependant claim 60 is drawn to the protein having plus end directed microtubule motor activity however the claim is also drawn to the nucleic acid sequence yet further dependent on claim 11 which is drawn to an expression vector. Therefore claim 60 is confusing with its recitation of protein activity when the claim is drawn to the protein and the expression vector. Clarification is required to overcome the rejection.
- 11. Claim 70 is unclear. The claim is drawn to the isolated nucleic acid of claim 1 wherein the encoded protein further comprises at least one of amino acids 602 to 784 of SEQ ID NO:1, 358 to 442 of SEQ ID NO:1 and amino acids 443 to 601 of SEQ ID NO:1. It is unclear if the claim is drawn to encoding at least one additional amino acid found within the recited regions or encoding something else. The metes and bounds of the claim is unclear, therefore clarification is required to overcome the rejection.
- 12. Claims 85-88 are indefinite because recites using the comparison algorithm.

  Applicants have claimed the algorithm that is impermissible and requires deletion because the claim is devoid of any limitation on the manipulation of the phylogenetic parameters. This attempt to incorporate subject matter into the patent by reference is improper because PTO policy does not permit the PTO to exercise any control over

algorithm, its alignment methods or the accuracy of the information contained therein.

Appropriate correction is required.

## Sequence Compliance

13. Claim 7 fails to comply with sequence requirements. Claim 7 recites sequences without giving all the sequences identification numbers. This claim contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 C.F.R. § 1.821(a)(1) and (a)(2). The claim must comply with sequence requirements.

## Allowable Subject Matter

14. Claims 1,8,9,11,13, 50-52,54,59,64-68,74-76 and 81-82 are allowed.

#### Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 1645

shortened statutory period will expire on the date the advisory action is mailed, and any

Page 14

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Ja-Na Hines whose telephone number is

703-305-0487. The examiner can normally be reached on Monday-Thursday and

alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Lynette Smith can be reached on 703-308-3909. The fax phone numbers

for the organization where this application or proceeding is assigned are 703-308-4242

for regular communications and 703-308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is

703-308-0196.

Ja-Na Hines June 4, 2003

LYNETTE R. F. SMITH SUPERVISORY PATENT EXAMINER TECHNOLOGY CENTER 1600